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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,002	11/07/2001	Jozef Herman Peter Bastiaens	08CN07467-1	5002

23413 7590 04/14/2003

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EXAMINER
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LEE, RIP A

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 04/14/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/683,002

Applicant(s)

BASTIAENS ET AL.

Examiner

Rip A. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on March 13, 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13, 16-21 and 23-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 16-21 and 23-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

This office action follows a response filed on March 13, 2003 (Paper No. 7), which includes amended claim 26.

Applicants have submitted *via* facsimile a statement indicating common ownership of Application Serial No. 09/683,002 (present application), U.S. Patents No. 6,353,050, and 6,500,895 to Bastiaens *et al.* at the time the invention of the present application was made, so as to preclude a rejection under 35 U.S.C. 102(e) in view of 35 U.S.C. 103.

The indicated allowability of claims 1-13, 16-21, 23-25, and 30 has been withdrawn in view of the newly discovered references to Miyoshi *et al.*, Yonemitsu *et al.*, and Koevoets *et al.* Rejections based on the newly cited references follow.

The finality of the last Office action has been withdrawn. This office action is non-final.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-7, 10-13, 16, 17, 19-21, and 24-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 2001/0031831 to Miyoshi *et al.* in view of U.S. Patent No. 4,011,200 to Yonemitsu *et al.*

Miyoshi *et al.* discloses a composition comprising 35.1 wt % PPE, 47.2 wt % polyamide, 2.44 wt % of electroconductive filler, and 6.9 wt % SEBS impact modifier. Another composition was prepared using 6.8 wt % of SEP impact modifier (see Examples 4-6). Use of a PPE copolymer is fully contemplated, the preferred copolymer being one containing 2,6-dimethyl-1,4-phenylene units and 2,3,6-trimethyl-1,4-phenylene units (lines 9-11 of paragraph [0038]). The exact constitution of said copolymer, however, is not disclosed in the reference.

Copolymers of this type are well known in the art. The patent of Yonemitsu *et al.* teaches that PPE copolymers based on 2,6-dimethylphenol containing 2-50 wt % of 2,3,6-trimethyl-1,4-phenylene units display excellent heat resistance and superior mechanical strength compared with homopolymer derived from 2,6-dimethylphenol (claim 1, discussion col. 5-6). Furthermore, the resulting copolymer is well suited for use in making molded articles (col. 6, lines 31-48).

In view of the teachings of both references, one having skill in the art would have found it obvious to use a PPE copolymer containing 2-50 wt % of 2,3,6-trimethyl-1,4-phenylene units (as per Yonemitsu *et al.*) for the copolymer described in Miyoshi *et al.* The combination is obvious because use of such a copolymer is contemplated in the primary reference. As such, one would expect such a combination to work. Regarding the impact modifier component, it is maintained that one having ordinary skill in the art would find it obvious to use a combination of SEBS and SEP impact modifier since each member of the combination was shown individually to perform the same chemical function, and the skilled artisan would have expected such a combination to work. *In re Kerkhoven*, 205 USPQ 1069, 1072 (CCPA 1980); *In re Lindner*, 173 USPQ 356, 359 (CCPA 1972). In summary, it would have been obvious to one having ordinary skill in the art to arrive at present claim 1 based on the teachings of the prior art.

Miyoshi *et al.* indicates that the PPE polymers of the invention must have a reducing viscosity in the range of 0.15-0.70 g/dL (paragraph [0037]). Thus, one would find it obvious to use polymers with this property, as described in present claim 2. Also, polyamides such as nylon 6, nylon 6,6, and mixtures thereof, are suitable for the inventive compositions. In fact, Example 6 (see Table 1) illustrates use of a combination of 11.8 wt % of nylon 6 and 23.5 wt % of nylon-

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6,6. Thus, the skilled artisan would find it obvious to arrive at the subject matter of present claims 3-5.

All prior art compositions contain at least one compatibilizing agent such as citric acid, maleic anhydride, fumaric acid, and malic acid (claim 9). As shown in the examples, the compositions contain about 0.68 wt % of citric acid. Therefore, one having ordinary skill in the art would also find it obvious to add compatibilizing agent, as prescribed in present claims 16 and 17.

Regarding the filler, Miyoshi *et al.* teaches use of carbon fiber (paragraph [0067]) and about less than 10 wt % of electroconductive carbon black (claims 6 and 11). Carbon black is used specifically in the examples (see Table 1). Use of metal filler, (*i.e.*, aluminum flake, nickel flake, copper fiber, brass fiber), metal coated filler (*i.e.*, nickel coated mica), and non-metal filler (*i.e.*, ceramic fiber) is also suggested (paragraphs [0066] and [0067]). Additionally, use of standard additives such as UVstabilizers, antioxidants, and slip agents in an amount of less than 10 wt % is contemplated (paragraph [0114]). As such, the skilled artisan would find it obvious to arrive at present claims 6, 7, 10-13, and 19, based on the prior art.

The examples in Table 1 show that the compositions of Miyoshi *et al.* exhibit volume resistivities in the range of  $10^2$  to  $10^4$   $\Omega$ -cm, and thus, it is obvious to the skilled artisan that the formulations of the prior art will meet the upper bound of  $10^5$   $\Omega$ -cm set forth in present claim 20.

Finally, since each element of the present claims is disclosed in the prior art, it is maintained that the skilled artisan would find it obvious to arrive at the compositions set forth in present claims 21, 24-26, and 30. This is especially true since these are obvious variants of those compositions described in Miyoshi *et al.* With respect to claims 27-29, the inventors state that

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the compositions are useful for exterior parts of automobiles such as door panels (paragraph [0119]). The skilled artisan would find it obvious to use the composition for this particular application as well.

4. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyoshi *et al.* in view of Yonemitsu *et al.* as applied to claims 1-7, 10-13, 16, 17, 19-21, and 24-30 above, and further in view of U.S. Patent No. 6,528,572 to Patel *et al.*

Neither Miyoshi *et al.* nor Yonemitsu *et al.* teaches the use of vapor grown carbon fibers or carbon nanotubes. However, these materials are alternate forms of carbon, and their use as conductive filler is well known in the art, as shown in Patel *et al.* (see discussion in col. 3, lines 6-52). Since vapor grown carbon fibers or carbon nanotubes are functionally equivalent to carbon black with respect to imparting conductivity to resin, and absent any showing of criticality for their specific use, one having skill in the art would find it obvious to use these filler with a reasonable expectation of success in preparing a conductive polymer composition.

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyoshi *et al.* in view of Yonemitsu *et al.* as applied to claim 1-7, 10-13, 16, 17, 19-21, and 24-30 above, and further in view of U.S. Patent No. 6,277,907 to Gelbin.

Although use of antioxidants and stabilizers is contemplated, Miyoshi *et al.* does not disclose use of pentaerythritol *tetrakis*(3-laurylthiopropionate). Compared with conventional antioxidants, this material is well suited as a stabilizer in thermoplastic resins that contain carbon black. Gelbin discusses the loss of utility of stabilizer in the presence of carbon black (col. 5)

and shows that pentaerythritol *tetrakis*(3-laurylthiopropionate) in an amount of about 0.6 wt % is useful in stabilizing thermoplastics such as polyphenylenoxides (claims 1 and 21, examples 16, 36, and 40). Based on these teachings, one having skill in the art would find it obvious to use this compound as stabilizer in the compositions of Miyoshi *et al.* with the reasonable expectation that the stabilizer would not lose its effect in the presence of carbon black.

6. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyoshi *et al.* in view of Yonemitsu *et al.* as applied to claims 1-7, 10-13, 16, 17, 19-21, and 24-30 above, and further in view of U.S. Patent No. 6,221,283 to Dharmarajan *et al.*

Neither Miyoshi *et al.* nor Yonemitsu *et al.* discuss the method by which electroconductive filler is incorporated into the overall composition. In addition to simply adding filler to polymer blend, Dharmarajan *et al.* describes a preferable method in which the filler is pre-dispersed into the polyamide so as to make a concentrate, or masterbatch, of the conductive additive in the resin (col. 4, lines 30-32). One having read the prior art would find it obvious perform the same step in order to arrive at the procedure described in present claim 23. The combination is obvious because the prior art of Dharmarajan *et al.* also relates to PPE/polyamide resins containing electroconductive carbon black, and therefore, one would expect this particular manipulation to work.



7. Claims 1-3, 6, 7, 10, 16, 17, 19, 21, 26, 27, 29, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 924 261 to Koevoets *et al.* in view of Yonemitsu *et al.*

Koevoets *et al.* discloses impact modified compositions of polyphenylene ether-polyamide blends. The examples furnished in the Table (page 7) indicate that representative compositions are comprised of 36 wt % of PPE, 48 wt % of polyamide, 6 wt % of SEBS and 7 wt % of SEP impact modifiers. PPE copolymers derived from 2,6-dimethylphenol and 2,3,6-trimethylphenol are also contemplated (page 2, line 33). However, the reference is silent with respect to the exact constitution of said PPE copolymer.

Copolymers of this type are well known in the art. The patent of Yonemitsu *et al.* teaches that PPE copolymers based on 2,6-dimethylphenol containing 2-50 wt % of 2,3,6-trimethyl-1,4-phenylene units display excellent heat resistance and superior mechanical strength compared with homopolymer derived from 2,6-dimethylphenol (claim 1, discussion col. 5-6). Furthermore, the resulting copolymer is well suited for use in making molded articles (col. 6, lines 31-48).

In view of the teachings of both references, one having skill in the art would have found it obvious to use a PPE copolymer containing 2-50 wt % of 2,3,6-trimethyl-1,4-phenylene units (as per Yonemitsu *et al.*) for the copolymer described in Koevoets *et al.* The combination is obvious because use of such a copolymer is contemplated in the primary reference. As such, one would expect such a combination to work.

Koevoets *et al.* also state that conductive carbon black and carbon fibers are suitable additives (claim 8). Although the amount to be used is not disclosed, one having skill in the art would find it obvious to arrive at the amount prescribed in the present claims especially in view

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of the fact that the claimed range is extremely broad (0.025-40 wt %). Furthermore, it has been deemed that the discovery of optimum values of result-effective variables is within the level of ordinary skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). In summary, it would have been obvious to one having ordinary skill in the art to arrive at present claims 1, 6, 7, and 10 based on the teachings of the prior art.

Regarding claim 2, Koevoets *et al.* indicate that PPE having an intrinsic viscosity in the range of 0.30-0.60 dL/g is particularly useful. Following this rough guideline, the skilled artisan would find it obvious to use a PPE copolymer whose intrinsic viscosity lies within or about the prescribed range. Both nylon 6 and nylon 6,6 are described in the text, so one having ordinary skill in the art would find it obvious to arrive at the subject matter of present claim 3. The skilled artisan would also find it obvious to arrive at present claims 16 and 17 because the compositions of Koevoets *et al.* are shown to contain 0.7 wt % of citric acid compatibilizing agent (see Table). Other additives such as stabilizers and polyolefins (viscosity modifier) are contemplated (page 6, line 9 and claim 8), and one would find it obvious to use these in order to arrive at present claim 19.

Finally, since each element of the present claims is disclosed in the prior art, it is maintained that the skilled artisan would find it obvious to arrive at the compositions set forth in present claims 21, 26, and 30. This is especially true since these are obvious variants of those compositions described in Koevoets *et al.* With respect to claims 27 and 29, the inventors state that pellets and molded test pieces were made from the compositions (page 6, lines 32-33). The skilled artisan would find it obvious to use the composition for this particular application as well.

***Response to Arguments***

8. The Applicants traverse the rejection of claims 26-29 under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 5,109,052 to Kasai *et al.* in view of U.S. Patent No. 4,038,343 to Yonemitsu *et al.* The Applicant's arguments have been considered, and the rejection has been withdrawn.

***Prior Art Record***

9. The prior art made of record but not relied upon is considered pertinent to the Applicant's disclosure. The following references were commonly owned at the time the invention of the present application was made, so as to preclude a rejection under 35 U.S.C. 102(e) in view of 35 U.S.C. 103

U.S. Patent No. 6,500,895 to Bastiaens *et al.*

U.S. Patent No. 6,353,050 to Bastiaens *et al.*

The following references are cited to show the state of the art with respect to (electroconductive) PPE-polyamide compositions.

U.S. 2002/0040090 to Kurasawa *et al.*

U.S. Patent No. 5,397,838 to Ohtomo *et al.*

U.S. Patent No. 5,596,040 to Miya *et al.*

U.S. Patent No. 4,957,966 to Nishio *et al.*

U.S. Patent No. 5,159,004 to Furata *et al.*

U.S. Patent No. 5,554,693 to Ohtomo *et al.*

U.S. Patent No. 5,534,600 to Bailly *et al.*

U.S. Patent No. 5,017,652 to Abe *et al.*

EP 0 675 165 to Kovoets *et al.*

EP 0 673 974 to Kovoets *et al.*

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (703)306-0094. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (703)308-2450. The fax phone number for the organization where this application or proceeding is assigned is (703)746-7064. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

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April 9, 2003



**D. R. WILSON**  
**PRIMARY EXAMINER**